

O. R. & S. E. CHASE.

Lozenge Machine.

Patented May 12, 1857.

No. 17,262.

Fig. 6.

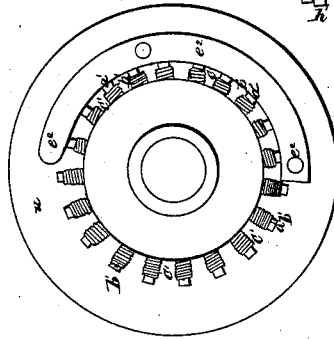


Fig. 7.

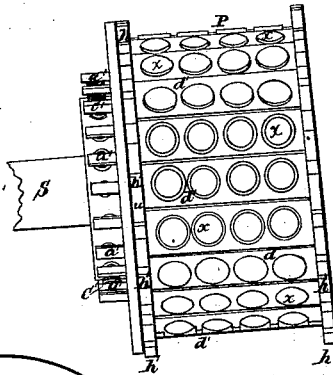
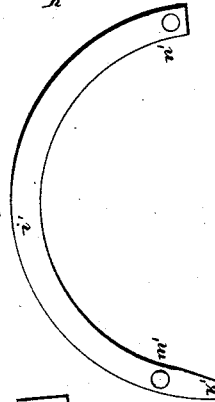


Fig. 8.



Parts of Figs 2 & 7  
of the original drawing  
destroyed

Fig. 1.

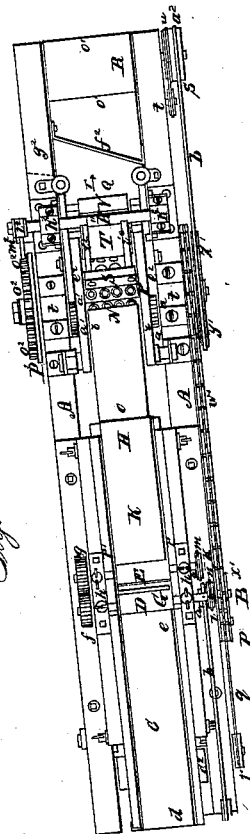
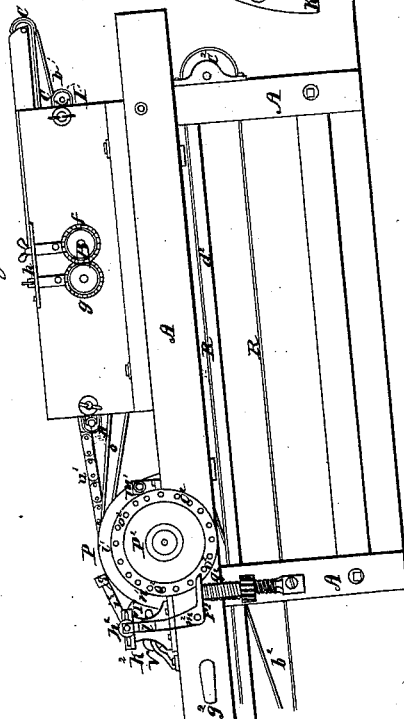


Fig. 2.



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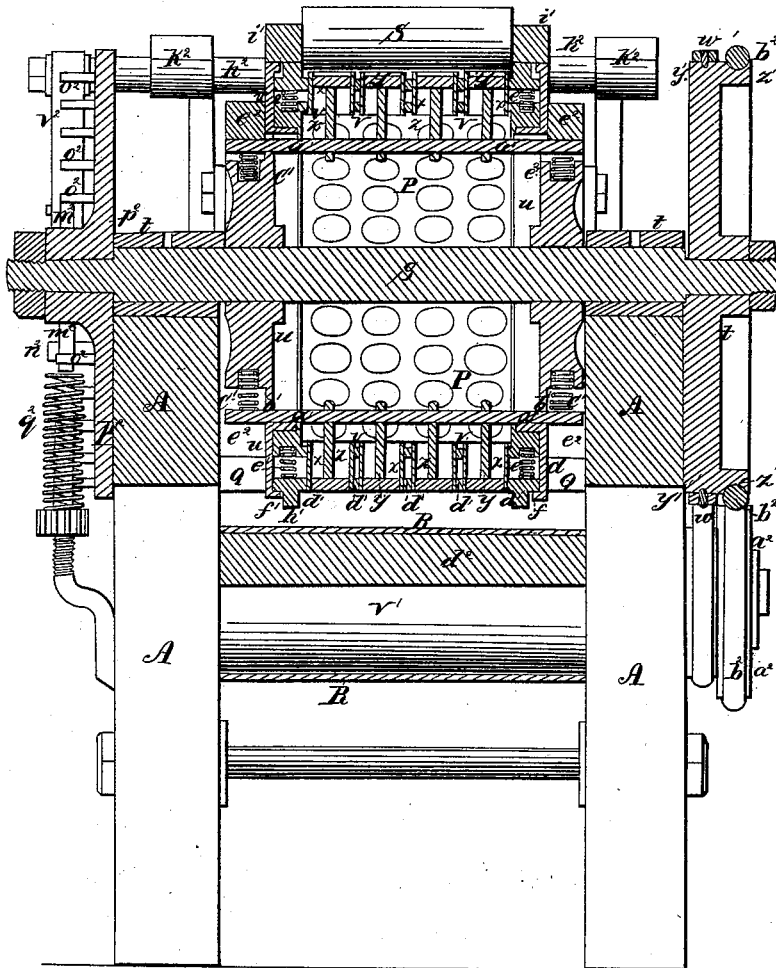
2 Sheets—Sheet 2.

Lozenge Machine.

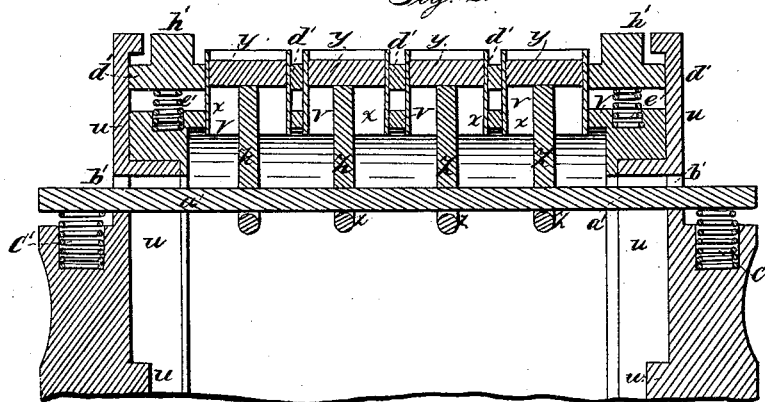
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*Fig. 1.*



*Fig. 2.*



# UNITED STATES PATENT OFFICE.

O. R. CHASE AND S. E. CHASE, OF BOSTON, MASSACHUSETTS.

## IMPROVEMENT IN MACHINES FOR MAKING LOZENGES.

Specification forming part of Letters Patent No. 17,262, dated May 12, 1857.

*To all whom it may concern:*

Be it known that we, OLIVER RICE CHASE, of Boston, in the county of Suffolk and State of Massachusetts, and SILAS EDWIN CHASE, of Charlestown, in the county of Middlesex and State aforesaid, have invented certain new and useful Improvements in Machinery for Making Lozenges, or stamping sundry forms or articles out of thin sheets composed of one or more materials; and we do hereby declare that the same are fully described and represented in the following specification and accompanying drawings, letters, figures, and references thereof.

Of the said drawings, Figure 1 denotes a top view of our improved machine. Fig. 2 is an elevation of one side of it. Fig. 3 is an elevation of the other side of it. Fig. 4 is a vertical and longitudinal section of it, the same being taken on a plane supposed to pass through one of the stampers of the shaping-cylinder, to be hereinafter specified. Fig. 5 is a vertical and transverse section taken through the axis of the shaping-cylinder.

Such other figures as may be necessary to a clear representation of our improvements will be hereinafter referred to and described.

In the said drawings, or in such of them as it is seen, A represents the frame for supporting the operative parts of the machine. B is the main driving-shaft, to which the moving power is applied in any suitable manner. It has a small pulley, *a*, (see Figs. 1, 3,) fixed upon it. Around this pulley and another pulley, *c*, an endless band, *b*, operates, and conveys motion to the pulley *c* and to a roller or drum, *d*, placed on the shaft of the pulley *c*. An endless apron, C, traverses around the roller *d* and another cylindric roller, *e*, arranged as seen in Fig. 4.

Beneath the roller *e* four other cylindric rollers, D, E, F, and G, are arranged, as seen in Fig. 4, and two endless aprons, K and L, are made to pass around and be supported by the rollers F and G and two other rollers, H and I, as seen in Fig. 4, the ends of the rollers D and E being made to rest against two vertical and parallel plates or planks, P' P'. The several rollers D E F G receive their motions in the directions denoted by arrows thereon in Fig. 4, such motions being produced by the following-described or any other proper mech-

anism. The cylindric roller G is fixed on the driving-shaft B, and of course is revolved by and with it. A gear, *f*, fixed on one end of the driving-shaft, engages with another gear, *g*, fixed on the shaft of the roller F, and thereby imparts motion to the roller F. The endless aprons K and L, passing around the rollers F and G, as a matter of course, are moved by them.

The mass of lozenge-paste from which the lozenges are to be cut is placed on the top of the apron C, by which it is conveyed to and presented between the two series of rollers D E and F G. As it passes downward between these two series of rollers and the endless bands K and L they reduce it to the thickness required for the lozenges to be cut from it. Previous to such reductions of the mass to an equal and proper thickness a quantity of very finely powdered sugar is placed on top of each apron K and L, and the rollers D and E are brought down to within a short distance from their respective aprons, such as will allow a very thin stratum of sugar to pass out between each roller and its apron and to be laid by it on the surface of the sheet of paste. Such powdered sugar prevents the paste from adhering to the aprons of the machine. The rollers D and E revolve in directions contrary to those of the upper parts of their respective aprons L and K. Consequently the rollers D and E not only serve the purpose of directing the paste to or between the reducing-rollers F and G, but they also serve to prevent compression of the sugar on the belts and regulate the thickness of the stratum which passes out from between them and their belts.

To the journals of each of the rollers D E suitable elevating and depressing screws, *h h*, should be applied in such manner as to enable each of the rollers to be elevated to such distance above its belt as may be desirable, and each of the said rollers is put in motion by suitable gears connected with the driving-shaft, or by a pulley, *i* or *k*, on the axle of each roller, an endless band, *l* or *m*, passing around each pulley *i* or *k*, and a pulley, *n* or *o*, as seen in Figs. 3, 1, the pulley *o* being fixed on the shaft of the roller F.

The dough or sheet of paste as it emerges from between the two aprons K L is received upon a conveyer or endless apron, O, which

runs around two cylindric rollers, M and N, such apron O being put in motion by suitable mechanism—viz., a pulley, *p*, (on the shaft of the roller M,) and an endless belt, *q*, made to pass around the said pulley, and another pulley, *r*, situated on the shaft of the roller *c*<sup>2</sup>. The apron O conveys the sheet of paste or "dough," as it is generally termed, to the stamping-cylinder or apparatus. (Seen at P.) The said stamping-cylinder has the journals of its shaft *s* supported in suitable boxes, *t t*, and is arranged as seen in the drawings. It is composed of two circular heads, *u u*, fixed on the shaft, and united together by a series of cross-bars, *v v v*, &c.

To each of the bars *o* a row of tubular cylindric or other proper shaped cutters, *x x x*, is screwed or otherwise properly attached, such cutters being arranged as seen in Figs. 4 and 5. A small piston or discharger, *y*, of a size corresponding to the interior of this tubular cutter, is placed within each of such cutters, and supported on a rod or stem, *z*, the several stems of each straight row of pistons being fastened to and made to project from a long bar, *a'*, whose ends pass through radial orifices made through the two heads *u u* of the cylinder P, as seen at *b'* in Fig. 6, which is a side view of one of the heads as detached from its shaft. Each of the bars *a'* rests at its ends upon springs *c' c'*, and when the said bar is forced against the outer ends of the orifices *b' b'* of the cylinder-heads *u u* the outer surfaces of the several pistons *y y y* connected to it are brought into the plane of the outer or cutting edges of their respective cutters *x x x*. The purpose of the pistons is to discharge the lozenges from the cutters at the proper time, and by an operation which will be hereinafter described.

In connection with each straight row or series of cutters, a scrap clearer or discharger is used. It consists of a bar or plate, *d'*, made with orifices through it of a diameter or size to receive the cutters, the same being seen in Fig. 7, which is a side view of the cylinder P as it appears when detached from the rest of the machinery. The scrap-clearers are made so as to be capable of being moved freely a short distance toward and away from the axis of the cylinder, and they each rest on and are pressed outward by two springs, *e' e'*. The ends of the several clearers extend, respectively, underneath two flanges, *f' f'*, Fig. 9, which project from the inner sides of the cylinder-heads and from the outer surface, and near the ends of each clearer two studs, *h' h'*, extend, as seen in Figs. 5, 7, and 9. Each circular row of studs *h' h'* acts in connection with a curved circular arc or bar, *i'*, arranged over it, as seen in Figs. 1, 4, 5, and 9, and fastened to the frame A. The rotation of the cylinder P is in the direction denoted by the arrow *g'* in Fig. 4. The inner surface of that end of each of the circular arcs or bars *i' i'* which is nearest to the roller H is flared outward or beyond the circular curve, as seen at *k'* in

Fig. 8, which is a view of one of the circular arcs. The object of such a formation of the end of the bar or the making such end with a cam, *k'*, is to enable the projections or studs *h'*, during the rotation of the cylinder P, to successively be depressed by the cam *k'* and caused to pass under the bar. While they pass around in contact with the concave arc *m' n'*, Fig. 8, they (the studs) and of course their scrap dischargers or plates from which they project will be depressed below the outer ends of the cutters a distance equal to the thickness of the sheet of lozenge-paste. As soon as the projection *k'* of each scrap-clearer passes beyond the ends *n'* of the two curved bars *i' i'* the clearer will be suddenly and smartly thrown or forced outward by the springs and against the flanges *f' f'*, and so as to cause the scrap of paste or dough resting on them and immediately around the cutters to be thrown off and down upon an endless discharging-apron, Q, arranged as seen in Figs. 1 and 4, and supported on two cylindric rollers, *o' p'*, and a horizontal rest table or board, *q'*, extended between the sides of the frame. Such endless apron has a movement given to it in the direction denoted by the arrow *r'* thereon, (see Fig. 4, and it is put in motion by means of an endless band, *s'*, which passes around a grooved pulley, *t'*, (fixed on the shaft of the roller *o'*), and a pulley, *u'*, fixed on the shaft of another cylindric roller, *v'*, disposed as seen in the drawings.

The cylinder P is put in rotation by means of an endless chain, *w'*, which passes around two toothed gears or pulleys, *x' y'*, one being fixed on the driving-shaft D and the other on the shaft of the cylinder P. There is also on the shaft of the cylinder P a groove pulley, *z'*, around which and a pulley, *a'*, fixed on the shaft of the roller *v'*, an endless band, *b'*, works and communicates motion to the roller *v'* and to an endless apron, R, which traverses on the roller *v'*, another roller, *c'*, and a horizontal plank or table, *d'*, all arranged together and with respect to other parts of the machinery as seen in Fig. 4.

As was hereinbefore described, each lateral or straight row of pistons *y y y* is supported on a bar, *a'*. In connection with such bars *a'* two curved stationary semicircular arcs or bars, *e' e'*, made like the bars *i' i'*, are used. They are fastened to the frame A and rest directly over the ends of the bars *a'*, and are to be so placed as to cause the bars to be moved inward or toward the axis of the cylinder at a proper time—that is, juice before or immediately after any of the straight rows of cutters pass by the roller N. While the bars are moving in contact with the inner surface of the arcs or bars *e' e'*, the pistons are depressed to their greatest distance below the edges of their respective cutters, and it is at such times that the spaces between the outer edges of the cutters and outer plane surfaces of the pistons are filled with paste or dough, which has been struck or forced into

them by the hammer or striker, to be herein after described. As soon as each bar  $a'$  passes beyond the lower ends of the curved bars  $e^2 e^2$  the springs against which it rests are relieved and force the bar suddenly forward or outward and against the outer ends of its orifices  $b' b'$ , and so as to discharge the lozenges from the cutters and cause the said lozenges to fall upon the endless apron R or a small thin board placed thereon, and moved by and with the endless apron.

It was before stated that the scraps or waste dough were thrown upon the endless apron Q. By the movement of such apron they are carried against a bar,  $f^2$ , directly underneath and against which the upper surface of the apron passes. This bar is not placed at a right angle to the sides of the frame A, but is arranged at an acute angle with one or both sides of it, as seen in Fig. 1. It consequently causes the scraps to be directed and moved toward, into, or through an opening or passage,  $g^2$ , made through the side of the frame and on a level with the top of the apron Q. As they are discharged from the opening they may be received into a suitable receptacle placed underneath it, and on the floor on which the machine may stand. The scraps are thus received and carried off on one apron, while the lozenges are received and carried off on the other. It is, however, customary to have a series of boards, each of about one-third the length of the machine, such boards being regularly laid on the endless apron R at one end and taken off at the other end; and after they have passed underneath the cylinder P and received the lozenges on their upper surface, such boards are afterward removed to and placed in racks or stands for the purpose of suffering the lozenges to dry by exposure to the atmosphere.

The next part of the machinery to be described is the striker. It consists of a block of wood or other proper material, S, arranged over the cylinder P and attached to a horizontal rocker shaft,  $h^2$ , by two arms,  $i^2 i^2$ . The said rocker-shaft is supported in boxes  $k^2 k^2$ , and has an arm,  $l'$ , projected down from one end of it and jointed to one arm of a bent lever,  $m^2$ , which turns upon a fulcrum,  $n^2$ . The opposite arm of such lever acts in connection with a series of pins,  $o^2 o^2$ , extended from the side of a circular plate,  $p^2$ , which is fastened on the shaft of the cylinder P and revolves with such cylinder. The said arm is borne up against any of such pins against which it may be by a spring,  $q^2$ . The pins  $o^2 o^2$  are set around in a circle and at equal distances apart, and as each one is moved around it so actuates the lever  $m^2$  as to cause the striker to be elevated and set free, so as to be thrown back or down by the recoil of the spring  $q^2$ . The striker is so actuated every time a straight

row of cutters is brought directly under it, and it strikes upon the sheet of dough or paste and forces it down upon the cutters in such manner as to cause them to pass through it. In advance of the striker a flexible roller or cylinder, T, is placed against the cylinder P, and so as to roll against and compress the dough into the cutters and compact the surface of the lozenges. A cylindrical brush, V, may be placed against the surface of the flexible roller and set in motion by any proper means, so as to remove any surplus sugar which might accumulate thereon.

In order that the waste or scraps may be as little as possible, the speed of the periphery of the cylinder P may be somewhat greater than that of the apron O, it being such as will bring each straight row of cutters close up against the cuts on the paste made by the preceding row, or that which had just before acted on the paste.

Having thus described our machine, what we claim therein is as follows:

1. The combination of the reducing-rollers F G, the directing and gaging rollers D E, the endless apron K L, and the sugar-receptacles formed by the endless aprons, the two rollers D E, and the side plates or timbers of the frame A, the whole being for the purpose of reducing the dough or mass of paste to an equal thickness and applying strata of powdered sugar or material to its flat surfaces, as described.

2. The striker and its operative mechanism as combined with the cylinder P and made to operate in connection therewith, essentially in manner as hereinbefore specified, not meaning to claim a roller as combined with the cylinder for simply forcing the dough into the cutters by pressure, but a contrivance like the striker, which forces the dough into the cutters and the latter through the dough by a blow or percussion, as described.

3. In combination with the cylinder of cutters and the striker, a flexible or elastic roller, T, as applied and used as specified, and for the purpose of finishing the surfaces and edges of the lozenges after the action of the striker has taken place.

4. In combination with the rotary series of cutters, pistons, and scrap-clearers, and their operative mechanism, the two endless aprons Q and R, for respectively receiving the waste or scraps and the lozenges and conveying them out of the machine, substantially in the manner as specified.

In testimony whereof we have hereto set our signatures this 23d day of May, A. D. 1851.

OLIVER R. CHASE.  
SILAS E. CHASE.

Witnesses:

R. H. EDDY,  
JOHN NOBLE.